**Slide 1**

Bill Bower: Today's seminar will focus on TB among the homeless dealing with unique challenges.

**Slide 2**

 My name is Bill Bower and I'm director of education and training at the Charles P. Felton National Tuberculosis Center, a component of the Northeastern RTMCC at the New Jersey Medical School Global Tuberculosis Institute. Our faculty today are myself, Dr. James O'Connell, president of Boston Healthcare for the Homeless Program

**Slide 3**

Dean Carpenter, family nurse practitioner at the Neighborhood Service Organization, Tumaini Center in Detroit, Michigan and Monica Heltz, registered nurse and TB program coordinator of the Marion County Public Health Department.

**Slide 4**

 How many homeless clients with TB disease does your program see each year? Well it's looking like the largest, almost two-thirds of the people listening in today, you're seeing one to 10 people. Most people, only 16 percent do not see people who are homeless with TB disease; everyone else is seeing clients with both of those conditions.

**Slide 5**

I'll now turn the program over to Dr. James O'Connell. Dr. O’Connell graduated from Harvard Medical School and completed his residency in Internal Medicine at Massachusetts General Hospital. In 1985, he founded the Boston Healthcare for the Homeless Program; he is now its President. Jim?

James O’Connell: Thank you so much and I'm thrilled to be here. I wanted to talk today just to set the stage a little bit for homelessness in general across the United States as well as the longtime connection between homelessness and TB that we've observed.

**Slide 6**

When we talk about homelessness, there's all sort of ways of interpreting it. There are some official definitions that we probably should be familiar with of who is homeless in this country.

 The federal government, mostly through HUD, defines homelessness as anyone who's sleeping on the streets in a place not meant for human habitation or sleeping in an emergency shelter as homeless. This does not include staying in a transitional housing, which is something important to keep in mind.

 And then most recently, there was a proposal by HUD to change a little bit of the definition of homelessness and I think it's important to point out a couple of things.

 One is that there was a change for a homeless that go into a residential program or a treatment program, if you stayed there 30 days in the past, when you came out, 30 days or longer, you were no longer in the category of homeless and the government has now changed that to 90 days. So it's important to know if you see someone who's been in the shelter then goes into a treatment program for 90 days, when they come out, they're still considered homeless and on the list of people who can be served by all of the HUD and HHS programs.

 The other change has been in number two there where it says individuals and families who will imminently and it says within 14 days, lose their primary nighttime residence, that means if they're living in a motel or a hotel or doubled up, but know that they were going to lose that residence within 14 days, they are also considered homeless, even though they haven't literally become homeless yet. That has been changed from a previously it was only seven days, so it's now 14 days.

 And number three is essentially a new category and it says an unaccompanied youth and families with children or youth who are defined as homeless under any statute, who have not had a lease or ownership within 60 days or who have had two or more moves in the last 60 days and who are likely to continue to be unstably housed because of a disability, are now considered homeless. This is a very significant change in the definition and I'd urge you to look at that.

 And then the last one has not been changed. It’s anyone – any individual or family who's fleeing of attempting to flee domestic violence, et cetera.

**Slide 7**

 What we have learned is that most counts of homelessness are very difficult to do. There's an estimate of 3.5 million Americans who experience homelessness each year; that's considered if you take over the course of a year, how many people experience it.

 Most of the counts we do are what they call point in time counts. That day we count everyone who's in shelters out on the streets and we do a single night or a single point in time count.

 And what I've included here is the HUD homeless point in time count in 2010. The number of sheltered people is about 62 percent of the population, about 400,000. The number of unsheltered, which would be the street folk, are about 250,000 and you can see also how the population has been divided, individuals, families, persons in families and family households.

So that just gives you a ballpark figure for numbers when you do it as a point in time and I would urge everyone to remember that is who is homeless on any particular night and if you were to do that count several times in the year, you would find numbers like that, but the names of the people would probably change.

 So the estimate is that, you know, it could be as many as 3.5 million people that experience it during the year, but probably I give you a sense of the totals here. You can see that there's about 700,000 people that you can count homeless in America on any given night.

**Slide 8**

Here is a graph from 2007 through 2010 and the encouraging thing is you can see that the graphs, if anything, are staying the same and going down just a little bit, which has been very encouraging and we think much of this is due to the very creative housing programs that many of you have been involved in. But these, remember, are point in time counts, so that's the numbers of the people that you can catch on a single night outside or more in the shelter. And you notice that it's still about twice as many single unattached adults as there are people living in families.

**Slide 9**

 I wanted to also point out one of the most important things that we have learned over the last couple of decades, I'll go back to a study that Dennis Culhane, from the University of Pennsylvania, who's been a hero to many of us, did with – when he looked at single adults in shelters in Philadelphia, and what he found was that basically if you see the red column there, that 80 percent of the people who came into shelters during a 10 year period, came in and stayed for one visit that was usually about a month or less and did not come back.

 What he observed when you start to look at homeless populations, about 80 percent of the people of what he would call transitional. They just come in, use the shelter once as an emergency shelter and then they go on to somewhere else but not to the emergency shelters.

 The more problematic groups are the last two, the episodic and those are people that would come in and out of the shelter frequently during the year staying anywhere from a month or two, then disappear for a while. And then the chronically homeless and that's that small group at the end which is 10 percent of the people who come into shelter.

 Basically the people who are living in the shelters, they spend 280 days or more each year living in a shelter and that population tends to do that year after year after year. And we've looked at who's at highest risk for tuberculosis, that is the group that sort of jumps to the fore. That group, interestingly, if you look at the blue column, on any given night 50 percent of shelter days are being used by that group of 10 percent.

 So it's a very interesting and important population that Dennis' studies have helped us to begin to focus on that population as an important numerator.

**Slide 10**

 HUD has a definition now of chronic homelessness. And let me just tell you that really quickly, it is homeless individuals who have a disabling condition, and by disabling condition, they mean substance abuse problem, a mental illness, a developed mental disability or a chronic medical or physical illness or disability and who have been homeless either for one full year consecutively or they've had four episodes of homelessness or more in the past three years and that's a good thing to remember because that is the group that has been targeted for many services, particularly supportive housing programs.

 And the number of chronic homeless in the country is tabbed and estimated each year and you can see that the total numbers have been going down, which is interesting, from 2007 to 2010 and we pretty much attribute that to aggressive public supportive housing programs that have been going on across the country in almost every city, but the total number in 2010 was about 109,000 – 110,000 people. So that is really our target population, the ones who have the highest reservoir likely of TB exposure.

**Slide 11**

 When we have outbreaks of tuberculosis among homeless people there's all sorts of issues that come up and one is that shelters are very difficult places where lots of people coming in and out and screening policies can be very difficult, not only to organize but to sort of actually accomplish. We also realize that people come in and out of shelters and they can be asymptomatic or just not recognized infectious cases, which is a problem. I think in every outbreak I've been familiar with, that's been one of the major problems.

 Another characteristic of homelessness is that people move. So they go from shelters to jail to hospitals and move around. So being able to screen people, particularly when you’re planting a PPD and need to read it 48 to 72 hours later, is immeasurably complicated because of that mobility.

 There's also an inability to provide preventative treatment because you have to then know that you can follow someone for weeks, months for every preventive treatment thing you're doing and that in many cities is very, very difficult to do.

 And then there's also the high cost of screening and follow up and this has been talked about by virtually everyone I've been in contact around the country, especially when I was preparing this talk.

 But it's not only the personal cost which is the morbidity that comes along with tuberculosis, but there's actually that reality of screening costs a lot of money. In New York City they screened over a thousand people and found four cases. That has been a difficult challenge that we all have to face when you go to implement screening. However, there is not much way around screening, just it's going to be costly and we need to advocate for better screening measures.

**Slide 12**

 I started doing this as a full-time doctor back in 1985 at Pine Street Inn where there was an outbreak in the mid-1970s that triggered a public health nurse to become involved. There was second outbreak with 29 cases in 1990 and since that time, we've had about four to eight cases annual which is a real tribute to a very nice collaboration between the state and city and the public health and the shelter clinics and outreach staff.

I wanted to acknowledge John Bernardo. He has been involved with tuberculosis since I began back in 1985 and to this day, he still comes to Pine Street Inn and does a specialty clinic to screen and evaluate people for tuberculosis exposure and treatment.

**Slide 13**

This slide comes from the local health department in Boston and it shows the numbers of cases of TB among homeless in Massachusetts beginning in 1974, so it goes back quite a way.

And if you notice beginning around 1983 - 84 there was an upsurge in tuberculosis cases that lasted right through until 1994 and then we began to go down with the exception of a little break in 1990. I laugh a little bit at this slide because I started working at Pine Street thinking I would help out a lot. I started working in 1984 and you can notice I didn't seem to do much to stem the tide of tuberculosis, so it was really a shock to me when I got there to realize how helpless I was as an internist trying to take care of TB and I realized that you can only take care of TB when you're working in a real partnership and that's when I got to the shelters. I learned how to step out of a hospital and work in a community and public health setting and that has been really a defining characteristic of my life.

**Slide 14**

On the next slide I wanted to show you a picture of Pine Street Inn. It's an institution that I've come to love dearly. Our program has a clinic there every day of the week, right, seven days a week. And Pine Street is the oldest and largest shelter in New England – a place that has been creative and on the forefront of homeless services ever since the 1980's and Pine Street right now, is actually one of our city's most progressive housing agencies and it's been diligently working on getting over 900 homeless people into housing.

At Pine Street there has been a Nurses Clinic started back in the 1970's, very much in response to wondering whether the nurses could leave the emergency rooms where they were seeing homeless people coming in and get down to the shelters where they would be able to sort of do preventive care.

**Slide 15**

Some of the nurses were looking at this gentleman who they knew very well and brought him in to see me. This is in 1985 in the clinic and they said, “Doc, you know, this man we know well, he just doesn't look right.” And if you look at the slide, you can see that he’s got scabies, he's very thin, he has basal carcinoma on the front of his ear. And he kept looking at me and saying, “Doc, what's all the fuss?” He had no symptoms. I did his vital signs, they were normal, I listened to his lungs and his heart, they were normal and I told the nurses and the staff who were there, “Look, I don't see anything acutely wrong but if you don't think he looks any better in a day or two come on back, I'll be here in the clinic, but you know, till the next night.”

So, sure enough, a couple days later the staff from the shelter brought this gentleman in and we had an old x-ray machine at Pine Street and this was 1985, right at the beginning of another outbreak which eventually included over 100 cases of active pulmonary tuberculosis.

**Slide 16**

This is the x-ray that we took the next night. Mind you, this is a man who I had examined, did not have any abnormal vital signs and when you put a stethoscope to that chest, it was clear. If you look very carefully there's a lot of cavitary tuberculosis. This is TB as you would see in the Third World countries. If you look very carefully also there's a right apical pneumothorax and this man turned out to be one of the early cases of multidrug resistant tuberculosis that we had in the shelter.

Turns out of 100 cases during the next several years, 60% of them were resistant to streptomycin and to INH, two of the most commonly used organisms and antibiotics and this was, in my recollection, it was the first multidrug resistant TB that we had seen in the country and none of the people that got it had HIV, so this is a pre-HIV epidemic and it was related to somebody who had been exposed to TB several years ago, had been partially treated and developed resistance and then he passed it to the 100 people that were at Pine Street Inn. In those days, it was phage 22 and it was INH and strep resistant.

**Slide 17**

MMWR did a little thing early on when the first 26 cases of the outbreak came in and you can see the resistance patterns there and you can see primitive ways that we used to do this. Now we have lots of RLFPs and everything else that you can do to track these things but back in those days, having to do PPDs all the time; we would send sputum to the state lab and we would do chest x-rays right on site to try to control that epidemic.

**Slide 18**

The next picture is just to give you a little flavor of what the shelter looked like back in those days. That's Barbara McGuiness on the right who is a TB public health nurse assigned to Pine Street Inn because of the TB outbreaks and Yoshiko Nan on the left is the nurse practitioner that I worked with on my team and you can see Barbara's office full of all those old x-rays, all of which are now digitalized, but it used to take up most of the room. And that was how we caught people with active disease with the x-rays right in the shelter. And Barbara was a magician at getting everybody in and getting all of those things done.

**Slide 19**

Another learning experience for me was that once we had those cases, they were INH and strep resistant, everybody needed four medications every day for 18 months to effectively treat that organism and what we had to do was learn to work together. So, this is Mark on the right, who is an outreach worker that I worked with on our team, and Ursula on the left is the state's TB outreach nurse. If you notice, they have their bicycle equipment there and they would just get on their bikes every day, this is back in 1986, and find everybody to get them their treatment each afternoon.

 And we had the added complication that most people when they got tuberculosis wouldn't come back into the shelter because they felt that's where they had gotten sick so we would have to find them out in the street. And this was celebrating the last day of the 18th month of getting this man his treatment.

 So about 96 of the 100 people were completely treated in that. And that was our first effort at reaching out and really bringing medicines to people and observing them.

 And I realize now when I've talked to some of my friends who've gone to Third World countries that many of the things that we learned in shelter outbreaks in our country are the strategies that they've been using in other countries now to do directly observed therapy.

**Slide 20**

 We were given some grants to get some UV lights and this is a typical dormitory at Pine Street Inn. Pine Street in those days was sleeping anywhere from 500 to 700 people each night and you can see how close the beds are; but those are UV lights.

**Slide 21**

We also were able to get some HEPA filters which actually had a major contribution into diminishing the spread of the outbreak. And I know that some of these things were extremely expensive but they were gifts at the time from one of the companies.

**Slide 22**

 Then the nurses did this ingenious thing and this became one of our most important tools. At nighttime in the dormitories, the workers would note who was coughing and if you were coughing through the night they would come and find you and then bring you into the clinic the next morning so we could do an evaluation.

 Even more powerful than PPDs and actually because it was impractical to do X-rays on everybody, the cough log became the place where most of the new cases were identified earliest and we still do that at the shelter. Many of the shelters do that, and will just share that with you as kind of a very low-tech but very, very high yield and an effective way to approach.

**Slide 23**

 These are the tuberculosis cases in Boston and in red, you can see the number of cases of tuberculosis among homeless people and you can see the large blip in the '80s and early '90s. A big fear of course is how do you maintain vigilance and how do you maintain the funding for vigilance.

**Slide 24**

 Let me end with a picture of Dr. Bernardo and Claire Murphy who were the doctor and nurse that’d come to the shelter clinic that happens every week and it's to keep surveillance for tuberculosis high on our list and he is remarkable along with all the staff.

**Slide 25**

And this is Barbara McGuiness.

**Slide 26**

Thank you so much for your time.

Bill Bower: Thank you very much Jim. This has really been eye-opening. It's a very passionate exploration of the connection between homelessness and TB. It’s clear the depth of your commitment as well as the needs for programs to sort of work outside the box and constantly adapt to challenges is pretty clear. You definitely pointed out a lot of ways in which programs have to go beyond the routine to be effective.

**Slide 27**

 Next I'd like to turn the program over to Dean Carpenter. He got his initial nursing degree from Eastern Michigan University and became a nurse practitioner in Michigan state. He currently divides his time between the chest pain center at the University of Michigan Hospital and the Neighborhood Service Center, Tumaini Center. This is center is the largest shelter in Detroit and it's on the frontlines of the intersection between TB and the homeless. Dean?

Dean Carpenter: Thank you, Bill. It's an honor to be asked to present the perspective of TB in the shelter staff.

**Slide 28**

First I'd like to talk a little bit about Neighborhood Services Organization (NSO). It was established in 1955 as a private nonprofit human service agency in Detroit. We have our fingers in lots of pies. There's a substance abuse treatment and prevention services here; older adult services which facilitates placement in adult foster care and extended care facilities.

 They operate the emergency telephone service which includes the Suicide Hotline in Detroit. There's a large multiservice center on the East side that provides emergency food bank, clothing, utilities, school supplies and transportation. The youth initiative project that helps keep kids off the streets and away from gun violence; the gambling addiction treatment services in Detroit. We're providing Michigan Prison Reentry Initiative but lost funding for that just recently helping our returning citizens. Life Choices, which is a large facility on Woodward that helps adolescents and adults with developmental disabilities.

 And last but not least, Homeless Services, which includes supportive housing program. They have an ACT-like treatment arm called Bridges program. The Road Home is the only private outreach for homelessness in Detroit and then where I work, the Tumaini Center.

**Slide 29**

 Our most ambitious project to date is the Bell Building. This was the historic Michigan Bell Building built in 1934. It's been dormant for the last couple of decades. Sheila Clay is our president and CEO, you can see here in the picture here with Mayor Dave Bing. NSO bought the building and right now rehabbing it for 155 single bedroom apartments for homeless individuals and right now there's a big meeting at the center here to get people qualified and placed in that structure.

 NSO corporate headquarters will be moving from downtown to the Bell Building. It will house a federally qualified health center. They'll be a laundry, chapel and the roof will be walkout garden for vegetables and flowers that the residents will use.

**Slide 30**

Here's a picture of the Road Home services. I'm standing there with Mr. Ramsey, he's one of the outreach workers who's just brilliant at finding people, if you give him a name, he'll know where they are. I'm also with a nurse practitioner student from the University of Michigan. She's doing her clinical rotation here last month.

 At this event we were supporting Occupy Detroit, the medical tent volunteers had asked us to come and assess and treat some of the homeless individuals who were volunteering at the encampment.

**Slide 31**

 This is where I work, so, the Tumaini Center. Tumaini is a Swahili word that means “hope”, it's been called the Shelter of Last Resort in the Cass Corridor. That's because we have no upper limit. There's no capacity limit and so we'll take people who if the other area shelters if they reach their capacity and they're turned away or if people are inebriated or floridly psychotic, they just can't follow the rules, they get kicked out of the other shelters, they'll end up at Tumaini Center. The theory being that if we turn anyone away they may end up freezing to death, so everyone is welcome.

 We have had as many as an estimated 700 people here on the coldest night and in that case it's standing room only, literally.

 As you can see, the facility is a bit dilapidated, it's a warehouse built around the turn of the century. Limited funding precludes all but basic maintenance in the building. Also the program is burdened by high staff turnover and overworked staff.

 On the positive side, we have onsite medical staff, that's me, yay. We've also harvested a close relationship with the health department in Detroit including data sharing.

 My theory is that if you've agreed to have TB skin test placed, then you've – it's implied that you've agreed to treatment, so under the HIPAA continuity of treatment clause, I freely share that data with the health department. Also you can consider TB to be a public health issue and so I'm frequently communicating with Detroit health department.

**Slide 32**

 The scope of the problem in Detroit is significant. I think we're unique in the nation for a lot of reasons.

 Detroit has been called the epicenter of America's urban crisis. There are an estimated 19,000 homeless in Detroit. That point in time count is actually difficult as Dr. O'Connell mentioned earlier. There are just too many structures for us to be able to find them all. That’s probably a low count.

 Also we have a high unemployment rate in Detroit. It's officially at 27%, but the jobless rate is closer to 50%. That comes from Bureau of Labor Statistics.

 We have a dearth of community health centers, the federally qualified health centers and those centers which meet the federal standards but don't receive federal funding called the look-alikes, generically called community health centers. We're down to 16 FQHCs and look-alikes in Detroit. We have no public hospital in Detroit.

**Slide 33**

 Another problem that burdens us is that Detroit is geographically a large city so the homeless are well dispersed. Here you can see the geographic footprints of San Francisco, Boston and Manhattan fitting inside Detroit with room to spare. Also this slide is from University of Detroit Mercy. Population listed here is high. They show 933,000; we’ve actually lost about a quarter of that population, we're down to around 730,000 in Detroit now in the last Census.

**Slide 34**

 Another difficulty is just the sheer number of abandoned buildings in Detroit, the so-called abandominiums. There are an estimated 12,000 to 20,000 so there are plenty of places for people to go underground.

**Slide 35**

Also the Detroit homeless population is much more medically fragile than the rest of the country. This is from the Homeless Death Prevention study in April of 2010. This vulnerability index was actually developed in part by our co-presenter, Dr. Jim O'Connell and it's a surprisingly accurate instrument for predicting who may be at risk for death if they should remain homeless.

 One thing that I'd like to draw your attention to is here the national average of people who met the criteria of vulnerable was 42 percent, in Detroit, it's 51%.

 Another thing that I'd like to point out here is the number of ER visits or hospitalizations in the last year. Nationally it was 34%; in Detroit, it's almost double that, probably because we have few community health centers.

 Another thing that caught my attention here is the number of elderly nationally is higher than in Detroit and that's probably because our elderly homeless did not survive to answer the survey.

**Slide 36**

 Another problem within any city; Detroit's homeless are transient.

 Here's a snapshot of the outside of our center and you can just a winter afternoon, people just coming and going; high turnover.

 So that tends to confound the typical questions that we face from health department at times of contact investigation such as who is in the center at the time that the case subject was. Well, it could be in the hundreds. Well who sat next to them? That changes hour by hour. Those are very difficult things to track here.

**Slide 37**

 The barriers to case contact investigation and for services include lots of legal and social determinants, such as people who are parole violators or who have open warrants against their arrest. They're likely to remain essentially underground. They're not going to cooperate with any agency including the health department if they want to remain anonymous and away from law enforcement.

 Also people who are escaping domestic abuse, who tend to register under an alias.

 We also have asylum seekers and illegal immigrants. Here's a picture of Mexican Town, Southwest Detroit, we have a large Hispanic community.

 Also, Metro Detroit area is the home for the largest Arabic ex-patriot community in the U.S. Some of them illegal or at least avoiding repatriation where they may face torture or death.

 Also another problem that we see are people who are avoiding drug dealers or other people who intend to do them harm, like gang bangers and such. The term is called “going ghost.” I don't know if that's a national term, but here colloquially it means you're staying hidden from whoever it is that may want to do you harm.

Last year I had a gentleman who was seen here in the clinic. After having gotten shot he was messing around with the drug dealer’s girlfriend. He signed in under an alias as well.

We also have high incidents of mental illness, substance abuse, organic brain disease and traumatic brain injury that would confound efforts for testing and treatment.

**Slide 38**

This is Willie Edwards; he's a former light heavy-weight boxing champ. He was North American Champion in 1984. He suffers from pugilistic dementia. He has latent TB infection. When I took him up to local hospital to get his chest x-ray to confirm that he did not have active disease, I started chatting with him, asked him what he was doing before he was homeless, and he said, “Oh I did a little bit of boxing”. And I said: “Really? Professionally?” He said: “Yes”. I said: “Did you have any titles?” He said: “Yes”. So I looked him up. He was Willie "The Sandman" Edwards; he was actually a boxing champ.

 He will not cooperate with any treatment even though he agreed to testing. He can't give a real clear coherent reason why he won't take medication. The good news is last week Willie was housed after seven years of homelessness. We finally got him into housing.

**Slide 39**

 We have the busiest international border crossing in North America. That means we have quite a few undocumented aliens.

**Slide 40**

This shows the poor turnout, as Dr. O'Connell mentioned earlier, the follow up of TB skin testing is just dismally low. This column shows the number of people tested and then this is the people who actually showed up.

**Slide 41**

The steps we're taken here at the Tumaini Center to mitigate the outcomes including improving the filtration, utilizing a database for screening, referral and contact investigation and I'll talk about that in a minute.

 Also thanks to Vern Greene and the people at the Detroit Health Department, we've switched to interferon gamma release assay, the QuantiFERON-TB Gold testing, which requires no follow up visit, so our yield is much higher.

 We’ve taken deliberate efforts to establish a close relationship with the health department and other homeless service providers.

**Slide 42**

The ventilation on the left shows the old fiber filter. This was the intake for the women's section in the shelter; you can see it's pretty much clogged. It's kind of jammed up there; there are gaps in the filter and in the duct, so it's providing absolutely no protection against transmission of Mycobacterium.

 We found that the UVGI filters and HEPA filters were cost prohibitive. In fact there was a University study that showed the annual energy cost of UVGI exceeds $600 and the annual maintenance costs is about $1000, that's simply not in our budget.

 HEPA filters also provide excellent filtration but they were too expensive for us.

**Slide 43**

So we did switch to pleated filters. There is some protection offered by pleated filters. The old fiber filters that we had offered no protection. HEPA filters are actually excellent at capturing the Mycobacterium, but we can't afford those.

**Slide 44**

 This is the database I was talking about earlier; it's called the Homeless Management Information System, HMIS. Ms. Ecanom here is entering a client in HMIS. It's a statewide database. It's actually quite robust and it captures any services from any participating homeless service providers in the state. So it's great for contact investigation. But it also has imbedded in it a screening tool for TB so those who have multiple risks for TB can be flagged for screening and treatment, as necessary.

**Slide 45**

 Here is a client being scanned in. They're using a little infrared scanner to scan the barcode of their ID card and it automatically enters them into the HMIS system.

**Slide 46**

 This is the QuantiFERON-TB Gold testing that we had done in December.

**Slide 47**

This is the testing crew from Detroit Health Department. They've actually lost funding so this part of the program is now defunct. I don't know who's going to be taking over the TB skin testing; we have not yet identified a lab in Detroit that can provide the service.

**Slide 48**

The outcome from that testing last month: Ms. Ecanom registered 92 people in the center that day; they were all screened using HMIS. Sixty-one percent of them agreed to testing, 31 refused or were not available at the time. We had five positive cases and, from case contact investigation, two additional cases were identified who were not homeless and not at the center but had been previously identified and were known to the Detroit Health Department.

 So we had zero active cases in those five positive cases. They provided a concomitant testing for syphilis and HIV at the same time. They identified one new case of syphilis and no HIV.

**Slide 49**

 This is a slide of Detroit. I wanted to make a couple points. One is that it's not all gloom in Detroit, there is actually a significant resurgence in Detroit. The HUD Secretary Donovan mentioned it in a New York Times article recently. There are quite a few young people, especially artists and musicians moving into Detroit because the availability of commercial space is excellent.

 They interviewed one young man who got an old abandoned warehouse and turned it into music studio and art studios and rented it out for commercial use and he was quoted as saying: “Where else in the world could a 23 year old man own a nine-story building?” Well, that's in Detroit.

 What’s happening Detroit right now is akin to what happened in Tribeca in the '70s and '80s and the Berlin in the 1990s, just an influx of youthful creative entrepreneurs, artists, musicians; especially in the mid-town region.

 Another point I wanted to make, I'm sure a lot of you remember that old Journey song, *Don't Stop Believing*, and the lyrics they talked about "He was just a city boy born and raised in South Detroit." Well this picture is actually taken from South of Detroit, which is actually Windsor, Canada, there is no South Detroit. This is across the border and we have to look south into Canada from – from where we are right now.

**Slide 50**

 So that concludes my talk on the perspectives of TB in homeless shelters.

Bill Bower: Thanks very much, Dean. You really shared quite a lot about what you and the NSO team are doing in Detroit.

 I think of the geography, the complex social situations and then the way you had to respond with databases, improved testing procedures. There's just a lot that needs to be done to provide comprehensive prevention, treatment and social services to make TB control be effective in a shelter setting.

**Slide 51**

 Monica studied nursing at Johns Hopkins and public health at the University of North Carolina. For the last two years, she's been the TB controller of the Marion County Health Department in Indianapolis. Monica Heltz?

Monica Heltz: This presentation is a case study of an actual client that we had, but I'm also going to go over some tips on working with shelters and homeless clients in general that we learned from our experience with an outbreak among our homeless men.

**Slide 52**

 Our client, who I'm going to call David. David was a 31-year-old male who presented to a local emergency department with two months of classic TB symptoms. A chest x-ray with an infiltrate in the left upper lobe and cavitation on his chest CT.

 He had been staying in a local homeless shelter and he was admitted to the hospital for TB rule out. And we were notified by the hospital staff through the usual channels.

**Slide 53**

 Just to give you a little bit of context for David's presentation, he presented in the winter, which is usually a cold time of year in Indiana. The shelters are usually pretty crowded and on overflow, which means that they're putting people just about anywhere they can.

 This picture is of one of the dormitories in a local shelter. You can kind of see at the top those are skylights and there are dividers between the beds, but the beds are still pretty close together, you can tell that they're bunk beds. This is where the lucky ones get to stay, but most folks end up sleeping on mats on the floor in the hallways and the dayrooms throughout the winter.

 Also at this time, an outbreak among our homeless men was identified the previous spring and at the time of David's presentation at the hospital; we had 13 genotype linked cases, all of whom were U.S. born homeless men.

**Slide 54**

 We had conducted some targeted testing events in the previous summer with all the major area men's shelters and David actually received a QuantiFERON as part of the targeted testing. His QuantiFERON at that time was positive and he did return for his results. But he did not make it to clinic in spite of monetary incentives and he was lost to us for follow up.

 Just a few words about his medical and relevant social histories. As I've already mentioned, David had received a TB blood test the previous summer but was not evaluated at that time. He actually had a history of HIV for three years, but had received little follow up for that. He had a long history of psychiatric illness for which he received disability. He had a history of alcohol addiction and incarceration.

 When we reviewed his medical record, he also had recent visits to the hospital for a stab wound, for suicidal ideation and he had two episodes that they call TB rule outs where he received a chest x-ray, which was negative and then he was released.

 We assigned a nurse for case management who interviewed him and learned that he had been staying both at a shelter and at a cousin's house. He gave us the name of the shelter but he refused to provide us with names of any of his other contacts.

 He did report taking some medications for his psychiatric issues and he stated that when he took his medications he felt fine. While he was in the hospital, the public health nurse had communicated with the hospital staff and they were to inform her if there were any changes in his plans.

**Slide 55**

 So, now I want to give you a couple of seconds just to throw out some thoughts you might have on potential problems for case management. So just to hit a few of the major points: the fact that he's staying in an overcrowded shelter is going to make the contact investigation very challenging.

 His psychiatric diagnosis coupled with homelessness and alcohol addiction could point to some potential problems for administering directly observed therapy. His history of incarceration could possibly point to some personal safety issues for staff without knowing what he might have been incarcerated for.

 And his HIV diagnosis might throw up some red flags regarding some possible drug interactions or other problems with the double diagnosis.

**Slide 56**

Day 11, the client actually went missing from the hospital. He has smear positive TB confirmed by a probe at that time and, obviously this is pretty scary for TB control staff as we now have an infectious TB client roaming the city with no address.

 He went missing on a Friday, so the nurse was notified after the weekend which was day 14 when she was reading the hospital notes. Further investigation revealed that the client had stayed in a shelter the previous day and he was eventually found on day 16 by our community health worker in a day shelter and delivered to the emergency department by ambulance.

 He was readmitted and at that time we met him in the emergency department and delivered a health directive ordering compliance and he did sign that.

**Slide 57**

 On day 23, our client was discharged from the hospital. He had received 17 doses of directly observed therapy. He was smear negative and he was clinically improving so he met our guidelines for being noninfectious. He was discharged to what I'm going to call the usual discharge location for homeless, which is a shelter that only accepts clients on discharge from the hospital. The plan at that time was for a 30 day stay.

 He had been interviewed by a social worker to determine further housing options, the DOT orders were coordinated. Unfortunately, the very next day he went missing from that shelter. The good news was that he had actually called his public health nurse in the afternoon of that day to inform her that he felt he couldn't stay in that discharge shelter due to their house rules, he just could not agree with them. But he did agree to be present at a local day shelter for DOT and he did meet her there and we delivered him another health directive, which he signed.

**Slide 58**

 What might you need to consider when discharging clients to shelters? In David's case the shelter he was discharged to had rules that were unacceptable to him. Just as a reminder, each institution, particularly those working with what most people would generally consider to be difficult populations, each of those groups has to establish rules that they feel are appropriate in order to safely maintain their services.

 You'll generally find that of the population using shelters, many will have specific preferences for shelters that they will use and those that they find unacceptable. You might want to spend some time familiarizing yourself with area shelters and what their house rules are in order to gain a better understanding of what might for your individual patients.

 Hospital discharge coordinators aren't going to be thinking about considerations for TB case management.

**Slide 59**

 For the remainder of therapy which lasted a total of nine months, David stayed sporadically in shelters, with family members and in an apartment which was arranged with the help of our social worker. He was incarcerated several times which subsequently resulted in a loss of the housing that we had arranged.

 He had a total of 23 missed doses of therapy. He had several missed infectious disease and mental health follow up appointments.

 We did give him a lot of assistance to extend his stay in the shelters. We helped him coordinate his housing. We helped him apply for Medicaid. We helped manage his HIV follow up appointments. We helped coordinate his mental health appointments and we helped him obtain medications for some other conditions.

 We also helped him get his birth certificate from another state and obtain a form of identification. We also gave bus passes and food cards as incentives for treatment completion.

**Slide 60**

 You might have noticed I hadn't mentioned the contact investigation. So towards the middle of his therapy, we were finally able to obtain some contacts. Here the circles represent contacts and the stars are cases. The big star in the middle is David. You can see on the left we have five personal contacts that were identified, none of them were tested as they could not be located or they refused testing.

 On the right are the 40 contacts that we identified through bed lists from the shelter and that was more part of our overall outbreak management strategy. Those two stars in there were identified as part of our outbreak management strategy. They were all infectious at the same time so it was kind of hard to tell who infected whom.

 And then the star on the left is one new case that was identified last year who was a relative of David's who reported having had extensive contact with him but who was never identified in the initial contact investigation.

**Slide 61**

 So just to summarize this case, we had three shelters that were involved. One was the day shelter, one was the discharge shelter and one is the overnight shelter.

 David had multiple interactions with the healthcare system prior to his diagnosis but had not received much follow up. He had multiple comorbidities, reluctance or inability to give up contacts, a lot of challenges completing therapy, challenging contact investigation, but in the end, he did complete therapy.

 I chose this case for the case study because it really highlighted all the challenges we had working with our homeless clients. Not everybody has this many challenges, but you have to be prepared for it because many of them will have at least a few of those same issues.

**Slide 62**

 Obviously hindsight is 20/20, if we could do it all over, we might have done things a little bit better. We could have obtained the bed list from the shelter immediately to begin the contact investigation, that wasn't something we knew that they could do until a little bit in.

 We could have done a better job questioning shelter staff to obtain any known social contacts at the shelter.

 We could have been a little more aggressive about our social work referral, maybe have the nurse visit a few more times in the hospital to get a better establishment of trust.

 We could have communicated a little bit better with the shelter and the jail when he went missing.

 We could have thought about housing him, offering other incentives and even maybe some more timely alerts to the rest of the provider community given that we were in the context of an outbreak.

**Slide 63**

 Just a few words about homeless clients in general. I would recommend that you be very persistent. These clients often require more work, patience, dedication and creativity.

 I would absolutely make sure that you follow through on any promises that you make and be careful of what promises you do make because your failure to follow through will very quickly result in the loss of trust. So don't ever make any promises that you cannot keep.

 You can be very creative with incentives and enablers, extra support such as help obtaining documents like birth certificates can be a form of an incentive. All day bus passes can be a valuable incentive.

 Obviously housing is the most reliable incentive but if you’re thinking about housing or if you have housing options make sure that you consider the food sources and resources nearby, especially if the housing takes your client out of their comfort zone and they're no longer able to travel to where ever they usually get food.

 And just a further side note, just be aware that you might find yourself becoming really involved in this community and caring about a lot of these people more than you thought possible.

**Slide 64**

 A few words about shelters: get to know your area shelters and what their resources are. This is one thing that we really learned from this case. Area shelters all have different resources, different roles and different rules. Some rules might not be acceptable to clients and some shelters might not be acceptable to clients and some clients might not be acceptable to shelters.

 Some shelters have clinics and medical staff and some don't. You might be surprised at the capabilities they have to make your life easier. They may be able to get bed lists for you. They might know the client and their contacts. I would suggest that you just tell them the information you're looking for and you never know, they might be able to get it.

 Also, once you assess the shelters that you're working with, you might find that you need to spend some time educating shelter staff and possibly even the volunteers about TB. So you want to be prepared for that. They might be scared or they might be very knowledgeable about TB.

 You want to be flexible. They might want you to answer other questions, especially if they don't have their own clinic staff. I got a lot of questions about bedbugs and MRSA.

 You want to be respectful, remember that you're on their turf and it might take some time to develop trust with both the shelter staff and the clients.

 Try to remember that most shelters see a lot of volunteers come and go and consistent staff might help the shelter staff and residents be more comfortable with the health department presence.

 And also try to remember that shelter staff see and deal with these clients every day so try to defer to their experience and expertise when it's appropriate.

**Slide 65**

 Some brief ideas about how you can work together with TB control and shelter staff. I would recommend that you develop a plan for homeless clients in general, another one for outbreak prevention and then an outbreak response plan in conjunction with your shelters and your jail personnel and you might want to also include some area hospitals like ER or discharge planning or infection control staff if it's possible.

 You want to recognize that you're all on the same team but that you have different skill sets and make sure to keep up regular contact with your shelters so that you can build trust and keep it.

 And recognize that services overlap. So you can use each other when it's appropriate. They might be able to help you out with DOTs and you might be able to help them triage coughing clients.

**Slide 66**

 Just a word about making a plan for homeless clients in general, I would consider some housing and food options, depending on the resources of your health department. Consider an immediate social work referral plan, what kind of contact investigation techniques you're going to use. Can you use bed lists? Is that a capability of your area shelters? Are you able to use photographs? That's a possibility.

 I would consider some kind of notification systems like how would you communicate with the shelters and the jails and hospitals. What kind of incentives and enablers can you use? Do you have the capacity to give out bus passes or some other similar incentives? And how are you going to build trust with your client? Are you going to visit them more frequently? Are you going to have one consistent staff person working with them? These are things you're going to want to consider.

**Slide 67**

 I would also plan to avoid outbreaks, obviously. Anything you can do to avoid an outbreak is going to help you in the long run. I would start with having a plan for homeless clients in general and then having and maintaining good relationships with your shelter and jail staff.

 You can assist the shelters with guidelines and policies such as implementing TB clearance cards. This is a picture of one that we developed. Helping them make cough logs, maybe they feel like their staff needs training, whatever kind of assistance you mutually agree on.

 You might want to help coordinate regular screening events for any high risk sites and you can help assist the shelters in understanding environmental measures to decrease TB transmission and then you could also consider adding shelter guidelines into your communicable disease code.

**Slide 68**

 Finally, you should definitely have an outbreak response plan before you have an outbreak. If you should be so unlucky as to have an outbreak among your homeless population, you're going to want to consider using interferon gamma release assays like the T-Spot or the QuantiFERON to do targeted testing. And when you're doing that, you want to try to get anybody that tests positive immediately into clinic, if you're lucky enough to have a clinic to immediately refer to because the longer the time is between when you test them and when you get them into clinic, the greater the likelihood is that you're going to lose them.

 We would recommend using cash or bus pass incentives given only at the point of follow up. Consider having meetings with your nurse case managers regarding infections or consider assigning just a single nurse to all the cases.

 Consider treating all latent TB with a short course therapy and consider using directly observed therapy for it with a consistent worker.

 I would also recommend thinking about your data management plan for linking and prioritizing large number of contacts.

 Consider how you might be able to share data and alerts. We had developed some Memorandums of Understanding and Letters of Agreement, some official documents with some other agencies in order to officially share information on people that we are looking for to prioritize for follow up.

 If your resources allow it, you should definitely consider housing clients at least through the initial phase of therapy or if possible, through the duration of therapy. And if you get any extra funds for managing your outbreak, you might want to consider it for improvement in shelter ventilation or UV lighting or any of those sorts of things to help the shelter decrease their risk of transmission.

**Slide 69**

 Finally, this is our take-home message. Basically the more you work with and involve your community partners, the easier it will be to find solutions when you really need to. Trust building, I would say, is the most important activity that you could possibly perform if you're working in this context.

 This is a picture of Earl Murphy - our community health worker and Nicole Jones, who's our medical assistant; and they are very good examples of people who do a very good job keeping and establishing trust with our clients.

**Slide 70**

 Finally, just a shout out from the host of the recent Super Bowl, we're now calling ourselves the Super City. I hope you enjoyed the presentation.

Bill Bower: Thanks very much, Monica. You really made it clear that building trust with partners and working together over a long period of time is what will build that, that that’s what's going to provide the homeless services and the medical services that can help solve the complex issues that are seen in homeless patients.

**Slide 71**

 The first question that came up, Dean, this would be for you if you have a definition of organic brain disease?

Dean Carpenter: Organic brain disease would include such things as alcoholic encephalopathy and that sort of thing that's cognitive deficit not due to trauma.

Bill Bower: Thanks Dean.

 What advice can you give for working with alcoholic clients when they have no interest in giving up alcohol?

James O'Connell: It's a great question because I think the reality is that many of the people that we're going to be trying to treat will be suffering from pretty severe and advanced alcoholism. During that outbreak I was most familiar with that began in the '80s right through the 1990, about 80 or 90 percent of the folks were active drinkers and so we just had to learn how to accommodate to their schedule and just figure out ways to be able to get them medication.

 We had, for example, one of the men who we had trouble finding used to drink at a regular bar, so we had the bartender there just give us a call when he showed up in the afternoon and then we would send our outreach workers or our nurse to give him his medication.

 The complication of course is when you're using INH and people are drinking, you have to be very careful about the effects on the liver so that is the major medical issue is how to continue give INH while somebody's actively drinking.

 But it is a big problem and my only advice is the best way to do it I think is to learn the patterns and the rituals of the people you're trying to treat and just try to fit into it rather than change it all the time.

Bill Bower: Monica or Dean, do you have anything to add on advice about working with alcoholic clients who have no interest in giving up alcohol?

Dean Carpenter: Yes, that's one of the dilemmas that we face is that you can't compel anyone to quit drinking even though it may be in their best interest.

Bill Bower: What is intensified screening?

Dean Carpenter: Here in the center we do targeted screening meaning that people who have scored high on the TB risk score and HMIS take time to actually place a TB skin test and read it.

 Aside from the mass screenings that the health department does, I don't know if that's the definition of an intensified screening, but we do targeted or focused testing here.

James O'Connell: Yes and I agree with Dean. But when we think of an intensified screening, we don't really have a strict definition of it but there are times when there are certain programs or certain shelters when the nervousness around TB is heightened so much that when people are coming in there's a requirement to have your screening with the PPD and usually that's referred to, in our world, as intensified screening.

 If you want to access the service you have to agree to have your PPD screened or your QuantiFERON.

Bill Bower: Does the CDC require TST testing for all shelters?

Dean Carpenter: The guidelines recommend screening of shelter staff biannually.

 I don't think they require, well I know they don't require it for the clients but it's recommended to have at least targeted testing.

Monica Heltz: This is Monica. I wanted to second that and just say that there are not requirements for testing in the shelters.

 And the other thing you have to remember, at least from a TB control perspective is that every shelter is different and so some of our family shelters, for example, all have private room so they would be considered much lower risk, so the guidelines are going to be a little bit different depending on what the risk level is.

Bill Bower: Thanks for that answer, Monica.

 One last question, which is the other side of infection control and it's how can we prevent staff from being infected?

Dean Carpenter: Well here at the Tumaini center, the staff will wear masks if there are clients who have persistent coughs until screening can rule them out for active disease. That's one of the measures that we take here at the Tumaini center. Given that it's an open center, there's no way to sequester anyone who's suspected of having TB.

Bill Bower: I really want to thank our faculty for sharing their knowledge with us and thank all of the participants for your questions and input and discussion.

**Slide 72**

 For those who are interested in more resources on dealing with TB in the shelter setting, there's an excellent video or DVD and a viewer's guide entitled "Shelters and TB, What Staff Need to Know.” It's available from the Curry International TB Center and they also have a practical manual on preventing TB called “Tuberculosis Infection Control.”

**Slide 73**

 Finally the Global TB Institute provides medical consultation services. You just call (1-800-4TBDOCS) with any questions requiring medical consultation in the Northeast Region.

**Slide 74**

 This concludes the conference today. Thanks very much for your participation.